

IN THE CLAIMS

Please amend the claims as follows:

Claim 1-7 (Canceled).

Claim 8 (New): A positron source, said source comprising;

an electron source configured to generate a continuous or quasi-continuous electron beam in which the energy of the electrons is of the order of 10 MeV; and

a target comprising a substantially plane surface and having a thickness less than 500 μm ;

said target configured to receive an electron beam on said substantially plane surface at a predetermined angle of incidence of less than 10° measured with respect to the substantially plane surface, and to generate positrons by interaction with said electron beam.

Claim 9 (New): A positron source according to claim 7, wherein the thickness of the target is within the interval ranging from 10 μm to 100 μm and the predetermined angle of incidence is within the interval ranging from 2° to 5° .

Claim 10 (New): A positron source according to claim 7, wherein;

the electron source comprises an electron accelerator and generates a continuous beam; and

said electron accelerator comprises a coaxial cavity that electrons pass through several times in a median plane perpendicular to the axis of said cavity.

Claim 11 (New): A positron source according to claim 7, also comprising:

a sorting mechanism configured to sort between positrons and electrons that did not interact with the target, said sorting mechanism comprising:

a first magnetic device having an axis in proximity to the beam axis and passing through the plane of the target, said first magnetic device arranged on the input side of the target at a distance, and configured to generate a magnetic field causing positrons emitted by the target to diverge;

a magnetic quadropole having the same axis as the first magnetic device and placed on the output side of the target, said magnetic quadropole configured to focus the positron beam and make the positron beam circular, said positron beam being flat at the output from the area of interaction between the electrons and the target;

a first stopping mechanism configured to stop electrons from the electron beam that did not interact with the target, said first stopping mechanism located on the same axis as the first magnetic device on the output side of the quadropole and at a distance so as to focus positrons into the circular section of the positron beam; and

a second magnetic device having the same axis as the first magnetic device and arranged on the output side of the first stopping mechanism, said second magnetic device arranged at a distance from the first magnetic device and configured to generate a magnetic field capable of causing the positrons to converge, said first and second magnetic devices cooperating to generate a magnetic field which prevents the positrons from encountering the first stopping mechanism.

Claim 12 (New): A positron source according to claim 7, also comprising:

a trapping mechanism configured to trap positrons generated by the target; and
a guiding mechanism configured to guide the positrons towards the trapping mechanism.

Claim 13 (New): A positron source according to claim 12, in which the trapping mechanism includes a Greaves-Surko trap.

Claim 14 (New): A positron source according to claim 11, also comprising:
a trapping mechanism configured to trap positions generated by the target;
a guiding mechanism configured to guide said positrons towards said trapping mechanism;
a second stopping mechanism configured to stop electrons in the electron beam which did not interact with the target and reached a zone between the second magnetic device and the trapping mechanism, and to prevent the electrons from reaching the trapping mechanism;
a guiding mechanism configured to guide the positrons towards the trapping mechanism through the second stopping mechanism.